

Management issues and corresponding monitoring questions for each ecosystem type.

Management Issue	Monitoring Question		
	Marine Ecosystem	Wetland Ecosystem	Terrestrial Ecosystem
Air Quality Degradation	How are airborne contaminants affecting plants and wildlife? Is acid deposition affecting marine species? Are high levels of ozone impacting the park's biological and geophysical resources? How is air quality affecting visibility?	How are airborne contaminants affecting plants and wildlife? Are high levels of ozone impacting the park's biological and geophysical resources? Is acid deposition affecting aquatic species? How is air quality affecting visibility?	How are airborne contaminants affecting plants and wildlife? Are high levels of ozone impacting the park's biological and geophysical resources? How is air quality affecting visibility? How is ranching affecting air quality? How is farming affecting air quality? How is transportation affecting air quality?
Altered Disturbance Regimes	What are the current coastal erosion/ accretion patterns? How are they changing? How are they affecting availability of habitat and seabed morphology?	Are erosion/deposition rates being altered? How are they affecting wetland ecosystems? How are flood regimes changing? How are changes in the flood regime affecting wetland/ aquatic species? What are the affects of fire on wetland/ aquatic ecosystems?	How are changing weather patterns affecting disturbance regimes? What is the fire history of the park? Are fuels building up enough to pose a serious fire threat to resources? How does fire affect nutrient flow through the park? How are erosion and deposition affecting dune ecosystems? What are the effects of anthropogenic erosion on terrestrial ecosystems?
Climate Change	Are changing weather and climate patterns affecting species composition, community structure and ecosystem function? How are climate changes affecting coastal processes? Is upwelling intensity declining?	Are changing weather and climate patterns affecting species composition, community structure and ecosystem function? How is climate change affecting disturbance regimes?	What microclimates are associated with the different terrestrial ecosystems? What are the patterns of change? Is global warming affecting community structure and function?
Disease	What are the trends in diseases of concern in the park? What are the impacts on afflicted species? How are other management issues affecting disease prevalence and transmission?	What are the trends in diseases of concern in the park? What are the impacts on afflicted species? How are other management issues affecting disease prevalence and transmission?	What are the trends in diseases of concern in the park (Hanta virus, Lyme disease, sudden oak death)? What are the impacts on afflicted species? How are other management issues affecting disease prevalence and transmission?
Engineered Structures	How are dams and other water control structures affecting marine habitat and related biotic resources? How are docks, marinas and other	How are dams and other water control structures affecting wetland habitat and related biotic resources?	

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	shoreline structures affecting coastal processes and biotic resources?		
External Development / Human Demographic Change	How are development and demographics changing outside the park? How are these changes affecting park resources? How are noise and light affecting marine biota? How is external development exacerbating other management issues?	How are development and demographics changing outside the park? How are these changes affecting park resources? How are noise and light affecting wetland biota? How is external development exacerbating other management issues?	How are development and demographics changing outside the park? How are these changes affecting park resources? What are the baselines for dark night sky and noise levels? How are noise and light affecting wildlife? How is external development exacerbating other management issues?
Habitat Fragmentation / Alteration	How is coastal development altering breeding and resting sites? Is it fragmenting other marine habitat? Is it altering species distribution and abundance?	Which external activities are altering wetland habitat most significantly? Which internal operations are altering habitat most significantly? Are species becoming genetically isolated? Is it altering species distribution and abundance?	What are the needs of the park fauna for migratory corridors? Which external activities are altering terrestrial habitat most significantly? Which internal operations are altering habitat most significantly? Are species becoming genetically isolated?
Land / Resource Use	How is adjacent land use changing? How is land use change affecting marine ecosystems? What are the repercussions of past uses of marine resources on current resources? What are the effects of aquaculture on marine ecosystems? Are there any effects of current commercial and sport fisheries on park natural resources?	How is adjacent land use changing? Is ranching affecting aquatic ecosystems? What are the repercussions of past land uses on aquatic systems?	How is adjacent land use changing? What is the grazing history? How is grazing affecting water quality, biotic communities, and soil qualities? What are the repercussions of past land uses on terrestrial systems? What are the effects of ranching on surrounding ecosystems? What are the effects of farming on surrounding ecosystems? Are certain land uses more closely linked to non-native species invasions?
Native Species of Special Interest	What are the major native vegetation types, their distribution, and condition? What are the historical vegetation patterns? What faunal species are considered native and endemic? What are the status and trends associated with specific species? What are the trends in key predators in the system? What is the level of	What are the major native vegetation types, their distribution, and condition? What are the historical vegetation patterns? What faunal species are considered native and endemic? What are the status and trends associated with specific species? What are the trends in key predators in the system? What is the level of	What are the major vegetation types, their distribution, and condition? What are the historical vegetation patterns? What faunal species are considered native and endemic? How is browse activity affecting plant populations? What key pollinators are important for native plant populations? What are

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	natural variation in select faunal species?	natural variation in select faunal species?	the status and trends associated with specific species? What are the trends in key predators in the system? What is the level of natural variation in select faunal species?
Non-native Species Invasions	What are the effects of non-native species on hydrography? How are non-native species affecting native populations, community structure, and ecosystem functions? How do non-native species affect the physical environment? Are non-native species altering food webs? Are non-native species sources for disease in native populations?	Are non-native plants spreading to new areas of the park? Are new non-native species approaching? How are non-native species affecting native populations, community structure, and ecosystem functions? How do non-native species affect the physical environment? How do they affect water quality? How do they affect air quality? Are non-native species affecting nutrient cycles? How are non-native species affecting disturbance regimes?	Are non-native plants spreading to new areas of the park? Are new non-native species approaching? How are non-native species affecting native populations, community structure, and ecosystem functions? How do non-native species affect the physical environment? How do they affect water quality? How do they affect air quality? Are non-native species affecting nutrient cycles? How are non-native species affecting disturbance regimes?
Nutrient Enrichment	What are the sources of nutrient enrichment? What are the nutrient limiting factors on the ecosystem? What are the effects of nutrient enrichment on plant communities? How does nutrient enrichment affect invasion patterns? Are nutrient levels excessive?	What are the sources of nutrient enrichment? What are the nutrient limiting factors on the ecosystem? What are the effects of nutrient enrichment on plant communities? How does nutrient enrichment affect invasion patterns? Are nutrient levels excessive?	How are ranching and farming contributing to nutrient enrichment? What are the nutrient limiting factors on the ecosystem? How do added nutrients affect terrestrial plant communities?
Park Development/Operations	How are park development activities and operations affecting marine biota? How are park activities affecting geophysical processes?	How are park structures and development activities affecting plant composition and wildlife behavior? How are park activities affecting geophysical processes?	How are park structures and development activities affecting plant composition and wildlife behavior? How are park activities affecting geophysical processes?
Park Management	What practices are in place to manage water quality? What practices are in place to manage air quality?	What practices are in place to manage water quality? What practices are in place to manage air quality? What natural resources need manipulation significant to cultural landscapes? How are restoration activities affecting park resources?	What natural resources need manipulation significant to cultural landscapes? How are restoration activities affecting park resources?
Fire Management	How does fire management affect air	What are the park's fire management practices?	What are the park's fire management practices?

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	quality, water quality and nutrient loading?	How are these practices affecting biotic and abiotic resources within the park? How does fire management affect air quality, water quality and nutrient loading?	How are these practices affecting biotic and abiotic resources within the park?
Recreational Use	How is recreation affecting marine habitat quality and quantity? How does human trampling affect fragile marine ecosystem components (biotic and abiotic)? How do recreational uses affect sensitive species and water quality?	Are recreational activities altering or fragmenting wetland/ aquatic habitats? Are recreational uses affecting water quality in wetland/ aquatic ecosystems? What are the effects of off-trail or social trail activities?	Is trail use (horse, bike) impacting natural resources? Are rock climbing activities impacting natural resources (esp. rare species)? Is trail use impacting soil properties and increasing erosion rates? What are the effects of off-trail or social trail activities? What are the trail carrying capacities? How are noise and light from recreational use affecting wildlife?
Resource Extraction	How are commercial and recreational fisheries affecting marine resources? How are dredging, dredge disposal, and sand mining affecting marine ecosystems?	How are fisheries affecting wetland/ aquatic resources? What are the impacts of illegal plant and animal harvest on wetland ecosystems?	What are the impacts of illegal and legal plant and animal harvest on terrestrial ecosystems?
Species at Risk (Rare, Threatened, Endangered, Other)	How are populations and meta-populations of species at risk changing in the park? Is current monitoring adequate and are data being managed to detect changes in species at risk? What are the key threats to species at risk?	How are populations and meta-populations of species at risk changing in the park? Is current monitoring adequate and are data being managed to detect trends?	How are populations and meta-populations of species at risk changing in the park? Is current monitoring adequate and are data being managed to detect trends?
Water Quality Degradation	How are oil spills and other pollutants affecting marine ecosystems? How is water quality affecting food webs, species populations, and community structure? How is water quality affecting recreational use?	What is the water quality entering the park? Is water quality impaired per designated use standard? What are the sources of contaminants? How is water quality degradation affecting biotic communities (macroinvertebrates, other fauna and flora)? What are sedimentation rates for park water bodies?	How are ranching and farming affecting water quality? What other terrestrial activities are affecting water quality, in and outside the park?
Water Quantity Alteration	Are sea levels changing? How are these changes in sea level affecting	Are changes in flow regime affecting erosion rates/ mass wasting?	How is water diversion affecting biotic and abiotic resources?

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	coastal erosion rates/ mass wasting?	How is water withdrawal affecting community composition and ecosystem processes? How is water diversion affecting biotic and abiotic resources?	